Five hundred and ninety-second Meeting.

March 10, 1868. — ADJOURNED STATUTE MEETING.

The PRESIDENT in the chair.

The President called the attention of the Academy to the recent decease of Sir David Brewster of the Foreign Honorary Members, and of Hon. Daniel Lord, of New York, of the Associate Fellows.

Five hundred and ninety-third Meeting.

April 14, 1868. — MONTHLY MEETING.

The PRESIDENT in the chair.

The President called the attention of the Academy to the recent decease of Dr. Samuel L. Dana, of the Resident Fellows, and of Professor William Smyth, of the Associate Fellows.

The following paper was presented: —

*Dispersion of a Ray of Light refracted at any number of Plane Surfaces.** By EDWARD C. PICKERING.

LET a_1 a_2 a_3, &c., be the angles included between the surfaces, n_1 n_2 n_3 their indices of refraction, i_1 i_2 i_3 the angles of incidence, r_1 r_2 r_3 the angle of refraction; $\sin i_1 = n_1 \sin r_1$ and in general

$$\sin i_m = r_m \sin r_m \qquad (1)$$

also
$$i_m = a_{m-1} + r_{m-1} \qquad (2)$$

As the dispersion of any portion of the spectrum is always proportional to the angular divergence of two rays of nearly equal refrangibility, if we vary n_1 n_2, &c., dr_m will measure the dispersion. Differentiating (1)

$$\cos i_m \, di_m = r_m \cos r_m \, dr_m + \sin r_m \, dn_m$$

* Since presenting this communication to the Academy, I have learned that a portion of this subject was studied by Sir David Brewster in 1812. I have, therefore, modified my paper, omitting what was not new, except when necessary to preserve the context.